A08960Ö

BR81575

②

AD A111305

RAE-Library Bibliography 380

April 1981

DTIC
SELECTED
FEB 23 1982
E

LIST OF RAE TRANSLATIONS
ISSUED DURING THE PERIOD
1 JANUARY 1980 TO 31 MARCH 1981

Compiled by

Petricia O. Flint

ROYAL AIRCRAFT ESTABLISHMENT

Library Bibliography 380

Received for printing 30 April 1981

LIST OF RAE TRANSLATIONS ISSUED DURING THE PERIOD

1 JANUARY 1980 TO 31 MARCH 1981

Compiled by

Patricia O. Flint

SUMMARY

This list covers all RAE Library Translations published during 1980 (up to 31 March 1981) and follows Library Bibliography 373.

Previous lists have been issued in Library Bibliographies 243, 249, 254, 261, 283, 313, 319, 324, 330, 353, 360, 366, 369 and 373.

2

LIST OF CONTENTS

Accession For	
NTIS CRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
	Avail and/or
Dist	Special
A	

LIST OF TRANSLATIONS AND SUMMARIES IN NUMERICAL ORDER

1953 APPLICATION OF THE STATISTICAL DYNAMIC METHOD. STUDY OF A MISSILE   A. Bourgine
NOSE-CONE IN A REVERBERATING ACOUSTIC ENVIRONMENT
Paper presented at a Conference at the Salle Chaleil, 11 Avenue
Hoche, Paris-8^e, 4 February 1976

After mentioning some theoretical results relating to the statistical dynamic
description of a structure, the author presents the provisional, general scheme for
calculating the spectral distributions and overall levels of the vibrations induced
in the structure by a diffused type of random acoustic field.

The results obtained from a series of experiments carried out on a specimen
missile nose-cone made from a composite material, are then given and compared with
those obtained by theoretical calculation.

The experiments on the nose-cone were carried out for and financed by the
Direction Technique des Engins (Délégation Ministérielle pour l'Armement).

1993 INVESTIGATIONS OF AN ACTIVE VIBRATION ISOLATION SYSTEM FOR   G. Reichert
HELICOPTERS   H. Strehlow
In: *Luftfahrtforschung und Luftfahrttechnologie Statusseminar
1977*, pp 87-124
Der Bundesminister für Forschung und Technologie, Bonn (1978)

A survey is given of the work related to the reduction of helicopter vibration
levels. The methods, both passive and active, of minimising the effects of rotor induced
excitation forces on the fuselage vibration characteristics by isolating the rotor/
transmission system from the fuselage are described. Attention is focussed on the work
at MBB and DFVLR in which an active control system was developed for eventual use on the
BO 105 research helicopter. The advantages of active control systems over passive
systems for isolating the helicopter fuselage from rotor induced excitation are indica-
ted.

2002 THE THEORY OF TWO-DIMENSIONAL SEPARATED FLOWS   L.V. Gogish
Turbulentnost', **8**, 5-73 (1975) Moscow   V. Yu. Neiland
    G. Yu. Stepanov

Separated flow, to the theory of which this review is devoted, relates to those
motions of real fluids which occur most frequently and are at the same time the most
difficult to investigate. It may be said without much exaggeration that every develop-
ment of hydro-mechanics, beginning with the work of Bernoulli and Euler, was, and is,
directly or indirectly determined by a gradual approach to an adequate description of
real separated flow, the calculation of the chief effects of the separation of the flow
from the surface of a streamlined body.

2017 ON THE ACTIVE PART PLAYED BY THE HEART IN THE VENOUS RETURN   W. Böhme
OF THE BLOOD
Ergebnisse der Physiologie, **38**, 251-338 (1936)

The author reviews comprehensively evidence from X-ray experiments supporting the
idea that the heart sucks blood into the atria during systole. X-ray cinematography and
kymography were used in studies on animals and humans with and without contrast media.

When the volume of the ventricles decreases during systole, (1) the volume of the
atria increases markedly as the valve plane descends towards the apex, (2) the calibre
of the venae cavae decreases and (3), as shown by experiments involving injection of
droplets of iodine-containing oil, the blood accelerates towards the heart.

Studies were also made of various pathological conditions, including respiratory and cardiac failure, pneumothorax, air and oil emboli, and the effects of some pharmacological agents.

2020 LIQUID CRYSTALS (NEMATIC LIQUIDS)
(Siemens AG, Munich, West Germany) BMFT-FB T76-71, (1976)

K.-H. Walter
W. Geffcken
W. Geubel
and others

The work described here is directed in the main at the development of a screen matrix with liquid crystals. The starting point was primarily a matrix concept that envisaged auxiliary elements for the decoupling. However, the concept of using liquid crystals capable of storage proved to be more advantageous in regard to actual realisation and the attainment of higher resolution. The end result of the work is a matrix consisting of 16000 image-points (each 0.5×0.5 mm^2) that utilises the bistability effect, is suited to the representation of graphical data or alphanumeric symbols, and operates in an erase-write action. Circuit concepts for the integration of the driver elements are worked out. The technological problems associated with the matrix as well as with general liquid crystal displays (such as surface purification, surface orientation, sealing techniques, and ageing processes) are treated.

2028 CONTRIBUTION OF PHOTOELASTIC ANALYSIS TO THE STUDY OF
TURBO-ENGINE COMPONENTS
In: *AGARD Conference Proceedings No. 248*, April 1979

J.L. Guillo

In the study of mechanical components, the favoured field of photoelastic measurement is the research into and the determination of local stress concentrations.

For industrial applications, the method of 'stress-freezing' is used exclusively in the analysis of three-dimensional stress states.

The means employed for the preparation and carrying out of freeezing operations are described and the equipment used is presented.

Examples of application are borrowed from the study of vital components of a turbojet engine, at the stage of conception and development; they take into consideration the diversity of the components analysed and the methods of stress application.

In addition to the knowledge of maximum local stresses in the components, two directions of research have been the subject of particular attention:

- the study of stress gradients in a depth which makes it possible to take into account the effect of the scale factor involved in the transfer to 'engine' components of results of fatigue tests on small specimens;

- the determination of the stress intensity factor K_I which governs crack propagation under cyclic stress application.

2029 FORMATION OF ORGANOSILICON COMPOUNDS. LVIII. SYNTHESIS OF A
CARBOSILANE WITH PROPELLANE STRUCTURE
Zeitschrift für anorganische und allgemeine Chemie, **419**, 1, 2-8 (1976)

G. Fritz
H.J. Vogt
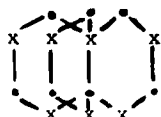
(I) ($\bullet$ = C or CH_2; x = $Si(CH_3)_2$ or Si) is formed by a coupling reaction

of $BrSi(CH_2SiMe_2CH_2SiMe_2Br)_3$ (II) with CCl_4 and Li. The reaction of $C_6H_5Me_2SiCH_2Li$ with $ClMe_2SiCH_2Br$ leads to $C_6H_5Me_2SiCH_2SiMe_2CH_2Br$. Metallation with lithium followed by reaction with $Cl_3SiC_6H_5$ produces compound $C_6H_5Si(CH_2SiMe_2CH_2SiMe_2C_6H_5)_3$ which then forms (II) by cleavage with bromine.

2031   CONCERNING THE SEPARATED FLOW ABOUT AN INFLATING PARACHUTE   N.V. Akrushkin
Tezisy v Sportivnykh Sredstv, Kiev, 60-67 (1978)   A.K. Kuchugura
                                                                            N.K. Tsyganov

The separated flow about an inflating canopy is modelled. The canopy geometry is approximated by a conical frustum with a hemispherical cap. The canopy envelope is replaced by a distribution of discrete vortex rings and the separated flow region is modelled by free ring vortices. The canopy pressure distribution and the mean flow velocity through the canopy vent are determined for one instant during the inflation for various vent sizes and canopy porosity values.

2032   THE DYNAMICS OF THE OPENING OF A PARACHUTE CANOPY   N.K. Tsyganov
Tezisy v Sportivnykh Sredstv, Kiev, 71-78 (1978)

The equation of motion of a parachute inflating under nearly constant velocity conditions in a horizontal trajectory is solved. The canopy geometry during inflation is assumed to be an ellipsoidal envelope of rotation with constant generator length. Empirical functions for porosity, apparent mass and the variation in canopy mouth radius with time are employed. Calculated forces and shock factors are shown to compare well with results determined from wind tunnel inflation trials.

2033   SWEDISH DEFENCE RESEARCH ABSTRACTS 78/79-3   Research Institute for
                                                                            National Defence,
                                                                            Stockholm

The Swedish Research Institute for National Defence issues a quarterly list of unclassified Reports published by the Institute. The titles of these Reports and informative abstracts have been translated in English. This volume is the third issue of 1978/79. Further volumes will be translated in due course. The main topics covered are: Protection - atomic, biological, chemical; ammunition and weapons; conduct of war, information and commands; vehicles and spacecraft; reliability and logistics; human factors; associated studies and their solutions; positive methods for limitation and control of armaments; psychology reports.

2034   CHANCES OF DETECTING AND DIFFERENTIATING CENTRAL SYSTEM   F. Hoffmeister
        EFFECTS OF DRUGS IN ANIMAL EXPERIMENTS WITH SPECIAL   W. Wuttke
        CONSIDERATION OF BEHAVIOURAL PHARMACOLOGICAL METHODS
        Arzneim-Forsch (Drug Res.), **25**, No.7a, 1162-1178 (1975)

Animal experimental methods suitable for the assessment of actions of drugs of the central nervous system are described with special reference to behavioural actions. The value of those methods for the prediction of central nervous actions of drugs in man are discussed.

2035 A HIGH SPEED SPECTRAL RADIOMETER WITH FULL ELECTRONIC CONTROL   H. Albrecht
Optik, **53**, 2, 89-103 (1979), West Germany   H.-W. Spaude

The paper describes a measurement setup allowing almost complete automatic spectral radiation measurement. The useful spectral range is from 0.25 to 2.5 µm and can be scanned with a maximum speed of 0.5 µm/s, wavelength accuracy being 0.001 nm. The device has an electronic control and correcting system which evaluates the measurement signal in accordance with the complete spectral sensitivity function of the device. Almost any correction function can easily be programmed in semiconductor memories. The entire control cycle including all necessary instructions, for instance, for a change of detectors or filters, can likewise be programmed. The device is described in connection with solar radiation measurements and their use. The system has been designed for high electronics compatibility. An improved version using a microprocessor is presently under construction.

2036 'PLATFORM BARBARA' AND ITS ROLLING PLATFORMS
Erprobungsstelle 71 der Bundeswehr, Eckernförde, July 1975

This report describes the off-shore platform 'Hubinsel Barbara'. It is supported on the sea-bottom in shallow water on eight retractable legs. Two rolling platforms are installed, which can be used to carry armament and simulate ship motion. The platform has other uses including missile firing tests. It has been deployed in the North Sea and the Baltic.

2038 THE DIFFUSION OF WATER VAPOUR IN HUMID AIR INTO THE   Walter Althof
ADHESIVE LAYER OF BONDED METAL JOINTS
DFVLR-FB 79-06, West Germany (1979)

The variation of moisture content with time and environment was determined for five aircraft structural adhesives by weighing cured bulk adhesive specimens and laminates before and after extended exposure in six climates. The coefficient of diffusion was calculated according to Fick's theory. The correlation between the moisture content in the adhesive at saturation and the atmospheric humidity was estimated. Several formulae were established to calculate the time-dependent distribution of moisture in adhesive laminates. Control tests confirmed the applicability of the formulae, where the adhesive was not altered by the environment.

2039 THE CONCEPT OF EFFECTIVE STRESS APPLIED TO ELASTICITY AND   J.-L. Chaboche
TO VISCOPLASTICITY IN THE PRESENCE OF ANISOTROPIC DAMAGE
Presented to the Euromech Congress 115, Grenoble, 19-22 June 1979.
ONERA Report No 1979-77. Provisional Edition

For some years various articles have shown the possibility of applying continuum mechanics to the model representation of the evoluation of variable damage, initially introduced by Kachanov. Of interest here are the complex problems posed by the aniso-tropy of this damage, an anisotropy which affects both the elastic behaviour and the viscoplastic behaviour, and also rupture.

It is shown how a damage tensor of the fourth order can be introduced through the concept of effective stress in order to take into consideration the effect of the damage on the elastic behaviour, on the basis of results furnished by homogenisation techniques. A three-dimensional law of anisotropy is proposed for creep damage, introducing a minimum number of characteristic coefficients. The possibilities of this law are studied for the case of the traction-torsion of thin tubes and are compared with previous formulations.

2043 SWEDISH DEFENCE RESEARCH ABSTRACTS 1979/80-1 Research Institute for
National Defence,
Stockholm

The Swedish Research Institute for National Defence issues a quarterly list of
unclassified Reports published by the Institute. The titles of these Reports and
informative abstracts have been translated in English. This volume is the first issue
of 1979/80. Further volumes will be translated in due course. The main topics covered
are: Protection - atomic, biological, chemical; ammunition and weapons; conduct of
war, information and commands; vehicles and spacecraft; reliability and logistics;
human factors; associated studies and their solutions; positive methods for limitation
and control of armaments; psychology reports.

2044 MECHANICS OF COMPOSITE MATERIALS. SUMMARY OF SOME T. Vinh
THEORETICAL AND EXPERIMENTAL STUDIES
Sciences et Techniques de l'Armement, 52, 1978

The author has chosen two aspects, namely assessment by calculation and the
dynamics of composite materials.

In the first part, the theoretical studies are reviewed, in particular various
methods for evaluating elastic constants (boundary methods using variational calculation,
methods using Airy stress function, elastodynamic methods) and recent methods of calcula-
tion for multi-layers in the plastic state. Finally, a critical study of the various
theories available for the propagation of waves and vibrations in composite materials is
made (equivalent homogeneous media theory, microstructure theory, mixture theory, theory
based on asymptotic development, etc).

In the second part, some experimental researches are reviewed for the calculation
of elastic constants in micropolar elasticity under a static and dynamic regime. The
mechanical characteristics of composite materials are examined along with the correspon-
ding experimental techniques (vibration of rods, ultrasonics, etc).

2045 LITERATURE RESEARCH ON THE MECHANICAL PROPERTIES OF FIBRE J.J. Gerharz
COMPOSITE MATERIALS - ANALYSIS OF THE STATE OF THE ART - D. Schütz
Volume I
(Fraunhofer-Institut für Betriebsfestigkeit LBF) Report No.
TB-145 (1979), Vol 1, July 1979, Darmstadt

This is a comprehensive review of mechanical considerations in the structural use
of fibre composite materials, based on 794 references to the literature, with the
emphasis on the aerospace application of resin matrix materials with fibres of carbon,
glass, boron and kevlar.

The report first discusses data on mechanical properties: static strength of
plain, notched and jointed material and the influence of impact damage, environment and
creep; fatigue behaviour under constant amplitude and flight by flight loading, the
influence of environment and the effect of load cycling on deformation; residual
strength following load cycling and impact. It then presents physical observations of
damage development in different structural situations, and available methods of damage
detection and measurement.

Then follows discussion of the application of fracture mechanics to damage growth
and residual strength; methods of stress analysis for loading and environment and
prediction of failure; structural design procedures for static and fatigue strength;
and inspection methods for ensuring quality in production and safety in service. A
section is included on test techniques and methods for determining mechanical behaviour
of coupons, components and structures, and a section on the absorption of moisture and
its effect on mechanical properties.

Finally, the report surveys the field of structural applications which exploit composite properties, discusses economic factors and construction methodology, and makes recommendations on the further development of fibres and matrices a..d on future research.

2046 COUPLE-STRESS EFFECTS IN THE TWO-DIMENSIONAL PROBLEM   V.V. Partsevskii
FOR CROSS-PLY LAMINATES
Mekhanika Kompozitnykh Materialov, No. 1, pp 46-50 (1979)

The effect of couple stresses, due to the rotation of the fibres of adjacent layers of a composite on the rigidity matrix and on the deformation mechanism of a composite under two dimension stress conditions are considered. In a unidirectional laminate where the diameter of the fibres is h and the distance between the fibre centres is c , the components of the rigidity matrix are given by c_{jk} which are results of the moments of interlaminar stress.

For the cross-ply laminates the interlaminar stress has to be calculated between adjacent fibre layers at angle $\phi + \theta$ relative of the axis x_j.

Finally these considerations are illustrated in an example for the destruction of the matrix of a uniaxial glass ribbon wound on an epoxide adhesive at an angle of $\pm\theta$ to the matrix.

It is concluded that the value of the rigidity components c_{jk} is larger for values of θ close to 0 and $\pi/2$ mainly due to the increase in the theoretical error associated with bending of the fibres in the plane of the layers.

2047 SWEDISH DEFENCE RESEARCH ABSTRACTS 1979/80-2   National Defence
                                                              Research Institute,
                                                              Stockholm

The Swedish National Defence Research Institute issues quarterly list of unclassified Reports published by the Institute. The titles of these Reports and informative abstracts have been translated in English. This volume is the second issue of 1979/80. Further volumes will be translated in due course. The main topics covered are: Protection - atomic, biological, chemical; ammunition and weapons; conduct of war, information and commands; vehicles and spacecraft; reliability and logistics; human factors; associated studies and their solutions; positive methods for limitation and control of armaments; psychology reports.

2048 A REVERSE PSEUDO-UNSTEADY AERODYNAMIC CALCULATION   G. Meauzé
METHOD
La Recherche Aérospatiale, 1980, No. 1, pp 23-30

The article describes a'reverse mode' calculation method, providing the geometry of a wall corresponding to a given velocity distribution, and gives a few examples of its application. The velocity distribution can be assigned to the whole duct wall whose geometry is looked for, or only to an element of it, where the remaining geometry is assumed known. This flexibility of use confers on the method a wide field of application.

The method uses a pseudo-unsteady method of calculation, which makes it possible to treat the case of flow with shock waves for a two-dimensional flow with possible variation of cross section.

This type of calculation finds an immediate application for defining the walls of a duct, such as an air intake or a nozzle, as well as the profiles of turbomachine blades.

This method can also contribute to the understanding and exploitation of experimental results, making it possible to determine the flow field corresponding to the measured wall pressure distributions.

2049 RELATIONSHIP BETWEEN STRESS DUE TO PHYSICAL ENVIRONMENTAL A.-M. Metz
FACTORS AND HUMAN RELIABILITY A. Meister
Z. Psychol., **184**, 1, 51-62 (1976)

Physical disturbance tests are used to demonstate an application of the analysis of reliability with reference to experimental data.

During 30- and 120-minute stressing by whole-body exposure to vibrations of different frequency, acceleration, and type, performances were required of subjects, which require them to muster all their power of mental concentration (modified clock test of Mackworth and audible signal detection experiments).

Data analysis of reliability of response proves to be a suitable means of describing performance. The results indicate that the following are the main factors affecting reliability of performance:

- condition of training of the subject;
- time of activity;
- time density of assignments;
- degree of stressing by exposure to vibrations.

An attempt is made to correlate performance, physical disturbance, and central-nervous-system activation.

2050 SOME FEATURES OF FLOW PAST SLOTTED WINGS A.V. Petrov
Uchenye Zapiski, TsAGI, **8**, 6, 119-124 (1977)

The results are presented of an investigation into the flow about a slotted wing for a wide range of variation in the maximum relative curvature of the slotted profile (f_{max} = 0.1 to 0.3), angle of incidence (α = 0 to 40°) and Reynolds number (Re = 0.5×10^6 to 1.55×10^6). Features of the development of viscous wakes behind elements of the slotted wing were apparent; the presence was discovered of local regions of return flow, both at the surface of the wing and beyond it within the wakes of the upstream elements. Changes are shown in the configuration of the regions of return flow depending on the angle of incidence, the angle of deflection of the double-slotted flap and on the Reynolds number. A relationship is established between the characteristics of the change in the lifting properties of the slotted wing and the development of regions of return flow.

2051 DISPLACEMENT OF CURRENT IN THE BARS OF A CAGE A. Glowacki
OF AN INDUCTION MOTOR
Przeglad Elektrotechniczny i. Liv. C., **54**, 4, 157-161 (1978)

The paper presents three methods for the calculation of the impedance of 'skin effect' bars of cage type induction machines.

(1) Using the effective penetration depth method presented by Liwschitz-Garik.

(2) By the use of a transmission line comprising a series of elemental networks as a model of the bar.

(3) By representing the bar as a network comprising a few sections, each section being related to a discreet portion of the bar.

LB 380

Methods (2) and (3) above are similar to those presented by Babb and Williams and are also applicable to the analysis or design of multicage rotors.

2052 THE EFFECT OF SURFACE TREATMENT OF CARBON FIBRES ON THE   G.M. Gunyaev
STRENGTH PROPERTIES OF CARBON-REINFORCED PLASTICS
Mekhanika Kompozitnykh Materialov, No. 4, pp 603-606 (1979)

The effect of silicon carbide coating on the shear, bending, stretching and compression strengths of carbon fibres (PAN) and epoxy resin 5-211B/carbon composites were evaluated. The distribution of the silicon carbide coating over the surface was studied by the electron microscopy techniques.

It was observed that the surface structure of the original carbon fibre determined the morphology and the strength properties of the material. The inner surface of the SiC film reproduced the characters of the carbon fibre surface while a dense coating was formed along the perimeter of the fibre. There was no change in the dynamic modulus of elasticity of the coated fibre but the strength was dependent on the film thickness. The twisting and the shear characteristics of the carbon fibre increased uniformly with the increase in the thickness of a well-bonded film.

There was no effect of the SiC coating on the compression strength 5-211B/carbon fibre composite for a film of 10-30 nm but optimum shear strengths were obtained for a film thickness of 10-15 nm. The tensile strength of the composite decreased due to the formation of a SiC mantle (which may not be continuous) on the tow and of cross-pieces between elementary fibres.

2054 SWEDISH DEFENCE RESEARCH ABSTRACTS 1979/80-3   National Defence
Research Institute,
Stockholm

The Swedish National Defence Research Institute issues a quarterly list of unclassified Reports published by the Institute. The titles of these Reports and informative abstracts have been translated in English. This volume is the third issue of 79/80. Further volumes will be translated in due course. The main topics covered are: Protection - atomic, biological, chemical, ammunition and weapons; conduct of war, information and commands; vehicles and spacecraft; reliability and logistics; human factors; associated studies and their solutions; positive methods for limitation and control of armaments; psychology report.

2056 FATIGUE INITIATION AT A HIGH OR LOW NUMBER OF CYCLES   J.-L. Chaboche
ONERA TP, No. 1979-134

This report embraces the fields involved with material behaviour in fatigue and introduces a macroscopic variable damage concept. The resulting theoretical framework is illustrated by a thermodynamic model from which a number of hypotheses can be cited. These hypotheses relate to the nature of the damage, its value at rupture, the manner of its evoluation and its irreversibility.

Actual observations made during fatigue experiments at high and low cycles resurrects the classical criteria: the fatigue limit, effect of mean stress, number of cycles to crack initiation and damage accumulation. Phenomenological models, limited by the definition of isotropic damage, are proposed.

Properties at elevated temperatures involving the interaction between fatigue damage and damage due to flow are only briefly dealt with. The interaction effects are

stated in terms of fatigue damage and the laws of flow so that a precise macroscopic model representing both phenomena is generated. This enables a number of simplified rules to be established, from which one may with discrimination determine an accurate prediction of crack initiation in a structure.

2059   SOME PROBLEMS IN THE CALCULATION OF FLOWS WITH   V.F. Molchanov
        TANGENTIAL DISCONTINUITIES
        Uchenye Zapiski TsAGI, <u>VI</u>, No. 4, 1-11 (1975)

        An investigation was carried out into a scheme of a method of discrete vortices, applicable in calculations of plane flows with tangential discontinuities. It is shown that the dispersion of vortices usually found in calculations is the effect of the incorrect nature of the problem on the multitude of growing perturbations, and of the instability of the difference scheme on the multitude of decreasing perturbations. On the basis of the application of the theory of the solution of incorrectly set problems and of the theory of difference schemes, a method is developed which potentially offers the possibility of carrying out calculations with a given degree of accuracy. Results are illustrated taking the case, by way of example, of the calculation of the nonlinear characteristics of a rectangular wing of small aspect ratio.

2060   ANALYTICAL INVESTIGATION OF THE NONLINEAR CHARACTERISTICS   V.F. Molchanov
        OF A RECTANGULAR WING OF SMALL ASPECT RATIO
        Uchenye Zapiski TsAGI, <u>IX</u>, No. 5, 1-10 (1978)

        In Ref 1, the form was found of the main nonlinear term of the expansion of the lift coefficient for a rectangular wing. In this paper, the form is found of all terms of the expansion of the lift and moment coefficients. Generalisations are given for the case of certain non-steady flows. Results of calculations are presented.

2061   THE COMPARISON BETWEEN THE UNSTEADY PRESSURE FIELDS   M. Couston
        CALCULATED AND MEASURED ON THE ZKP MODEL   J.J. Angélini
        AGARD Report No. 688. Presented at the 50th Meeting of   J.P. Meurzec
        AGARD Structures and Materials Panel, Athens, Greece,
        April 1980

        The unsteady pressure fields prediction for a supercritical wing is considered from a two-dimensional nonlinear method corrected for three-dimensional interactions between strips using an asymptotic approximation. This approximation is derived for wings with large aspect ratio and low sweep angle.

        Part of the paper will deal with an application of this method to a real case, that is the unsteady experiment carried out with oscillation of the control surface on a rigid model in the S1-Modane transonic wind-tunnel. These experiments have been part of the ZKP programme, sponsored by the Federal Germany Ministry of Research and Technology and by ONERA, with participation by DFVLR, MBB, VFW-Fokker and ONERA.

2062   SWEDISH DEFENCE RESEARCH ABSTRACTS 79/80-4   National Defence
                                                                       Research Institute,
                                                                       Stockholm

        The Swedish National Defence Research Institute issues a quarterly list of unclassified Reports published by the Institute. The titles of these Reports and informative abstracts have been translated in English. This volume is the fourth issue of 1979/80. Further volumes will be translated in due course. The main topics covered are: Protection - atomic, biological, chemical; ammunition and weapons; conduct of war, information and commands; vehicles and spacecraft; reliability and

logistics;   human factors;   associated studies and their solutions;   positive methods for limitation and control of armaments;   psychology reports.

2064   ADAPTATION OF A TURBINE TEST FACILITY TO   J. Francois
HIGH-TEMPERATURE RESEARCH   Y. Le Bot
AGARD Conference Proceedings No. 229, Ankara,   J. Michard
September 1977   P. Deguest

A facility for research on a high temperature (1800 K) and high pressure (4.5 bar) turbine stage is described. The turbine operates in a realistic engine environment and is comprehensively instrumented to permit wide variation of mainstream and coolant flow parameters.

The development of robust probes for the measurement of turbulence and temperature fluctuations and optical pyrometry techniques is described.

Results of studies of nozzle guide vane heat transfer coefficients, metal temperatures and film cooling efficiency are presented together with rotor blade surface temperature distributions.

The MINOS rig has confirmed the validity of turbine design prediction methods by providing performance data to correlate theory, scale model testing and gas turbine engine testing.

Future work on this rig will aid the design of optimum blade cooling systems and investigate the validity of blade life prediction methods.

AUTHOR INDEX

DAT
FILM